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ABSTRACT

An educational reformer describes his views and his mode of analysis in his quest to deal with educational change. He suggests that, to survive in educational and political change, it is necessary to have what may be thought of as a map of the territory, together with some notion of the desirable directions and the available paths. He links the discussion of educational change to past, present, and future changes in society as a whole. He considers the historical basis underlying the present educational structure and considers directions in which that structure has been moving. The author suggests that the educational matrix--the structure supportive of learning--consists of time, space, subject matter, and social and administrative organization. He describes each of these elements and then classifies current educational alternatives in terms of the variations they make in one or more of the four elements of the matrix. The document concludes by examining what the patterns of education will be in the future and what the relationship between society and the schools will be. (Author/DN)

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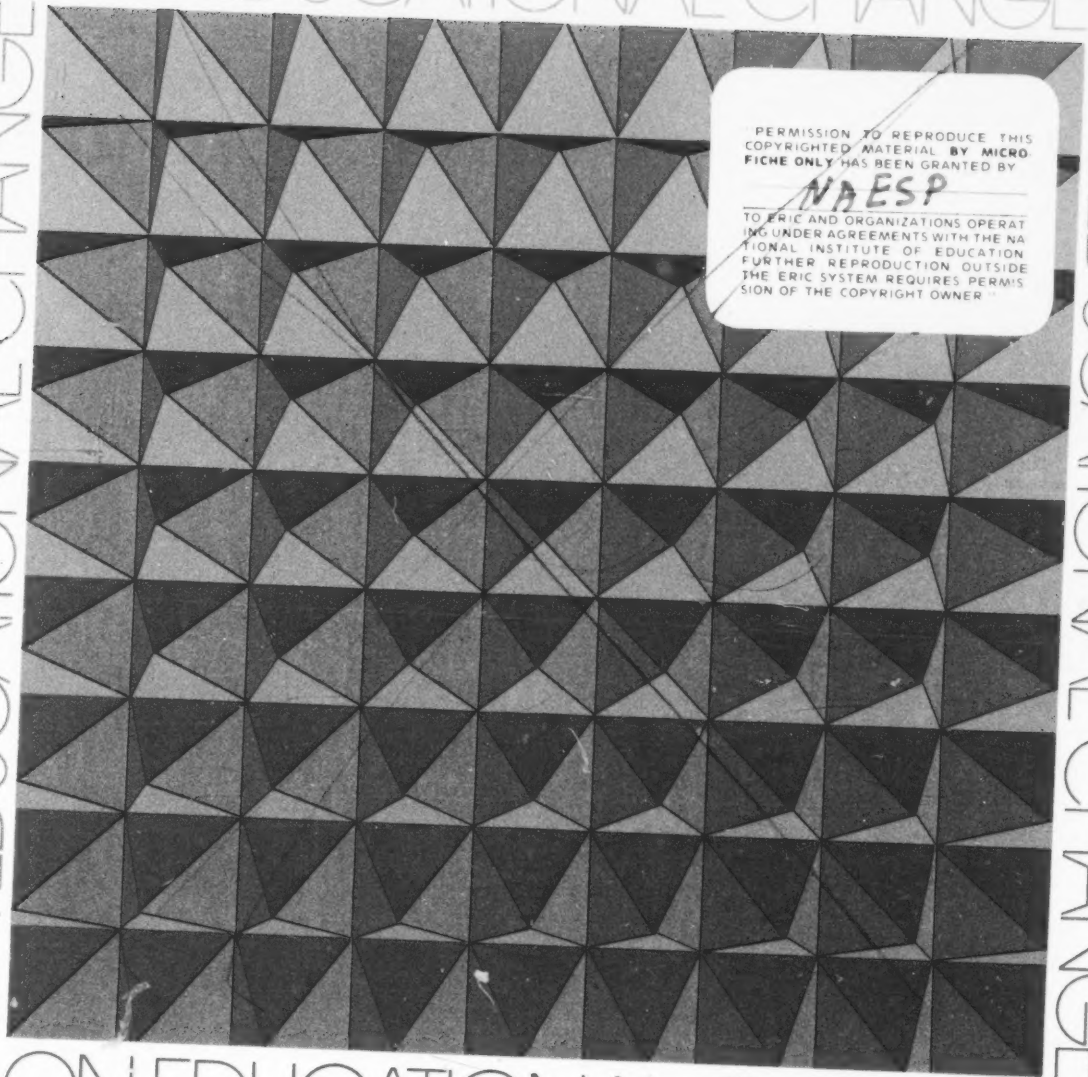

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John Bremer

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Preface

The following pages are not the outcome of lofty and isolated contemplation. They are the result of sometimes desperate attempts to think through precisely what can be done by an active and practical educational reformer, as conscious of his own limitations as of those of school and university structures and personnel. To survive in educational and political change, it is necessary to have what may be thought of as a map of the territory, together with some notion of the desirable directions and the paths that are available. I have tried to provide from the crucible of my own experience, a mode of analysis which is rooted in easily recognizable reality and which, therefore, is not doctrinaire. I can only hope that it will serve others as it has served me.

My indebtedness is great. Among authors, I owe much to Homer, Plato, Dewey, and Freud. Of institutions, Pembroke College, University of Cambridge, the University of Leicester, St. John's College, and Dalhousie University, have all provided me with colleagues in learning. Of teachers, the late Professor J. W. Tibble comes preeminently to r[illegible] mind, although in that mysterious and wonderful way which helped and is still helping me to learn without his teaching me at all.

John Bremer

Victoria,
British Columbia

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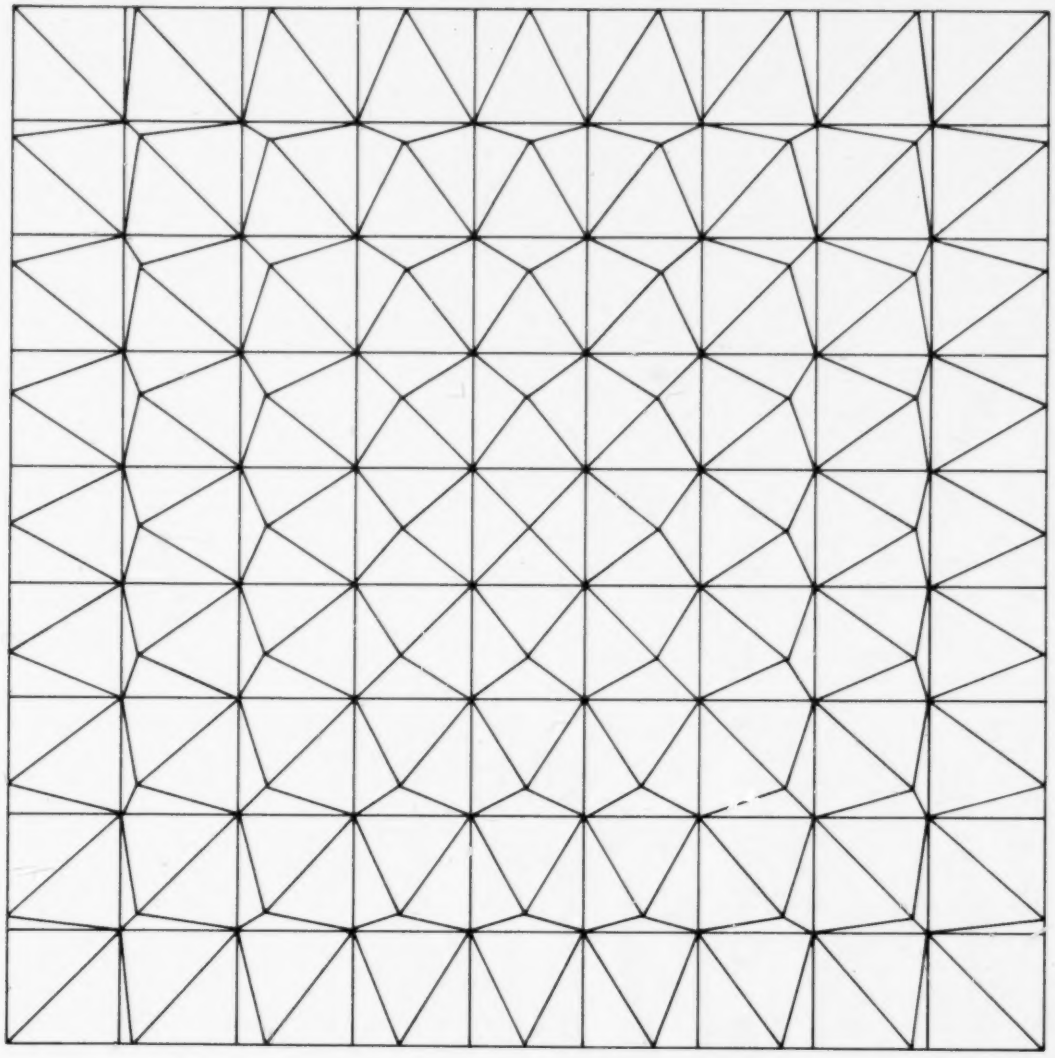

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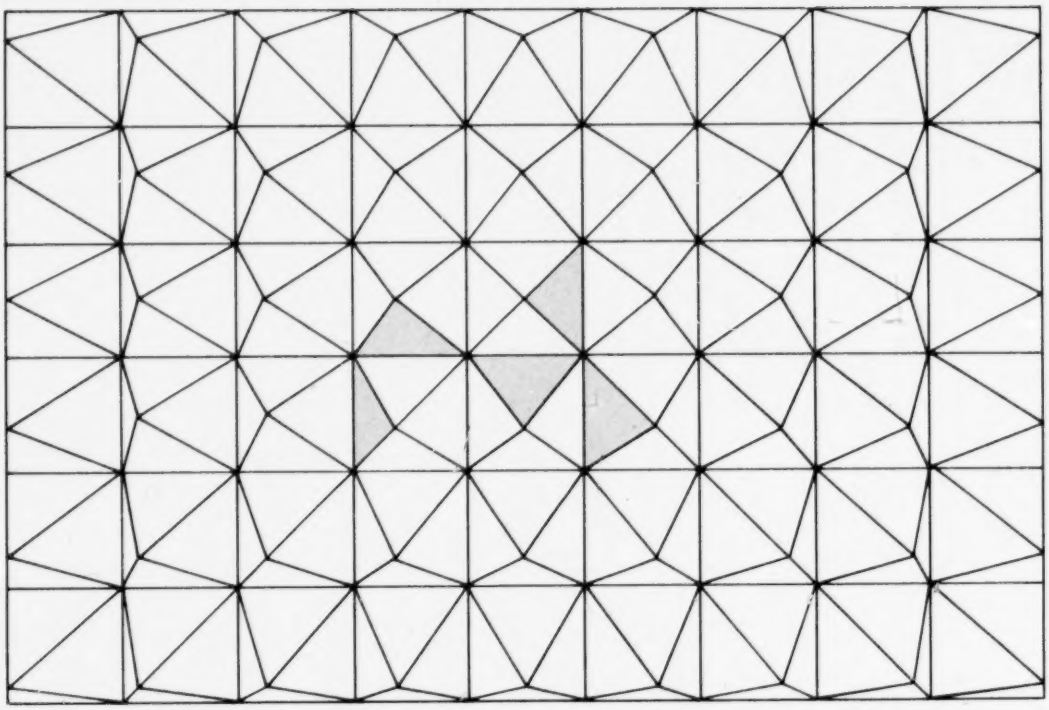

The need for change in our educational system is, of course, only a reflection of the need for change in the general structure of society, which perhaps accounts for the emotional investment people make on both sides of proposals for the reform of education. The required social changes have to do with the distribution of wealth and the distribution of authority; so it is not surprising to see educational problems centered around the financing of public education, the power of organized teachers, and the rights of unorganized parents and students. It is inevitable that social problems will be projected into education, instead of being dealt with directly in their own proper political sphere; and educators, crying to be left alone to get on with their job, as they conceive it, have not been heard—nor will they be heard. It is perhaps their conception of their job that limits their effectiveness, for there is little doubt that the conception comes from an earlier time. Many of them hope, and even expect, that change will miraculously pass them by, like the Angel of Death; they are the humble ones. The self-styled change agents, an arrogant minority, seem to assume that change is good, but that it only applies

to other people. An even smaller minority want to abolish formal education altogether, either by legislation or by extra legal means, which in the larger social setting often means revolution.

Nothing is more infantile than the supposition that there will be no change unless it is the assumption that change will come about only by violence. It is important to realize that these views about change, advocated or attacked, demonstrated or remonstrated, sometimes by subtle and sophisticated intellects, often have their ground in psychological conditions and not in the structural requirements of society in general, or of education in particular. But to say this is not to dismiss these two views as unimportant or irrelevant. On the contrary, if individuals are being driven into division, confrontation, or helpless inactivity by the stress that is being felt in the total fabric of society, it should emphasize the need for change on mental health grounds. It also suggests that there is a more rational view of change, which is more adequately based in social reality.

The reason for the stress in the social fabric is not hard to find; in fact, it is well known intellectually, if not operationally. The new media of communications, created and made widely available in the last few decades, have made it impossible to maintain the old divisions of public and private. What used to pass unnoticed is now almost forced on an unwilling observer. What used to be unnoticeable is now stripped of its camouflage and has become apparent to the most casual passerby. Space has been almost annihilated, so that events are instantaneous with their reporting, and the reporters with their audience. Information about every conceivable matter is available, and our interdependence is such that, no matter what occupies us, we are minding our own business (which is how Plato has Socrates define justice).

To be minding one's own business no matter what one is doing may seem to make the task of being just (if that is what it is) remarkably easy, but in actual practice the reverse is true. We do not see clearly how events and actions are related to one another and to us in a causal nexus. The present complexity of the world almost defies us to establish a continuity between ourselves and all the information that impinges on us. We worry about people and events, but we are not at all sure how they will affect us, or how we are responsible for them. Communications developments have made it impossible for the old definitions of roles to be maintained. The social structure has been badly shaken, but the public has not been led to a new structure, a new set of role definitions that would provide some measure of security.

One response to this situation is for the individual to decide that he does not want to know anything about a whole range of anxiety producing topics. He wants to know less, but it is hard to escape the information bombardment. Another response is to demand more information, so that a better judgment can be made. Unfortunately, the rapidity of news reported events provides very little chance for in-depth analyses. And even if time were taken, the amount of time needed would require a total reorganization of a personal timetable—being a citizen can be a full-time job. Most of us, and certainly most students, are left knowing enough to

be bothered but not enough to be effective.

Communications has affected every walk of life; nothing will ever be the same again, not even politics. But the universality of the effects means that every structural element in our society has to be thought through again, using our present communications power as a principle of organization. This is not a need for innovation, for adding embellishments here or there, but a need for total structural renovation, for systemic reform. In education alone, this is readily apparent. To decide on any one change, no matter how trivial it may seem, leads almost immediately to a confrontation with the whole educational system. As a microcosm, schools reflect the complex self-articulation of the larger society, and to change one part is to throw the whole mechanism, or organism, out of gear. The most obvious metaphor is the brontosaurus, which, owing to its small brain and extensive, intricate structure, could not adapt itself quickly enough in the face of changing climatic conditions. However, we do not have half a million years.

Those who would prefer no change at all envisage the media simply as new ways of achieving the old goals, and so they must be seen as manipulative at best, and as censorious and tyrannical at worst. Unfortunately for them, the creation of the media is an irreversible process, and the days of the Grand Inquisitor are numbered. Those who advocate revolution might well want to see the anxiety and frustration caused by the present situation increased and intensified in order to heighten division and destruction.

There does remain an alternative, namely, to set about the systematic development of our changing society, in the light of the new and powerful forces (like the media) that are now at work, in a planned and intelligent way. What would "intelligent" mean? It would mean that all existing forces must find a place in the scheme of things, that the new society would be community, and that it would be continuous with the historical past. To ignore any existing force would be to live in a fantasy world, to flout reality; to insist that the new society be community is only to recognize that the old social and territorial boundaries can no longer be maintained, and that our survival, across the whole planet, depends on cooperation; to require continuity is to accept the present as our starting point, and with it the principle that historical rights, duties, and social patterns may only be permanently redefined in the lives of the participants, and with their agreement.

Nothing has done more harm to the cause of changing educational systems than the limited understanding of school administrators of the nature of change, unless it be the newspaper rhetoric of many of them, and the superficial and gimmicky nature of many proposals. To change is not to destroy; it is not to substitute; it is not to replace; all of these deny continuity with the past. Change involves the old at the same time that it involves the new. The kind of change with which we are concerned is renewal, the process of life continuance. As Burke said, "We preserve by changing." Preservation is not fossilization, not ossification; it does not require the skills of the taxidermist, but those of the hippocratean doctor who assists the patient in curing himself. The preservation through change comes about as a society of a school system interacts with new forces so that, through new structures, these forces cease to

be threatening and become means for life's continuation. Television is, perhaps, the most obvious example of a power threat to school systems, and yet there has been virtually no attempt to make television support the work of education. Since it cannot be made to support the schools as they are (not even through Sesame Street), it is ignored.

If educational leadership has been deficient in understanding the nature of change, it has also been limited in how to bring it about. Basically, there are two models of change that are current. The first model is derived from the physical sciences—specifically mechanics—and it is similar to a game of billiards. The world, or at least our part of it, is marked off and limited with boundaries like a billiard table on which there are a number of stationary balls. Change is brought about from outside the billiard table world when a billiard player uses a cue to strike one of the balls, which in turn strikes other balls, until the effect of the player's arm movement with the cue is totally dissipated, and everything returns to rest until the next impact of the cue on a ball. In this model, change is brought about within the system by the introduction of a force from without the system; any change in the cue or the player is accidental and irrelevant. Here the educational leader is a veritable *deus ex machina*.

The second model is derived from the biological sciences—in this case, a flower garden. Our part of the world is like a flower garden, with an environment appropriate for the growth of seeds. The seed contains within itself a principle of growth that, under proper conditions, will enable it to transform into its own kind of plant, produce flowers, and then generate seeds to repeat the cycle. Here, change comes about because the appropriate mixture of seeds and environment is created—by chance, perhaps, but ideally by the gardener.

If we object to thinking about people as if they were like billiard balls, responding to the stimulus of the cue like so many behavioristic psychologists, the prospect of identifying people with flowers may be more attractive. There is certainly more play for the imagination, and we can imagine a superintendent as a cool, young tiger lily, or a new teacher as a daisy, with some children as dandelions being dealt with by the vice principal cast in the role of a snapdragon. But we are still left, in this model, with the notion that it is the gardener, from outside the garden, who manages the enterprise, and that he himself essentially remains unchanged. So does the manifestation of the goal; it can never be more than a garden.

Contrary to what educational psychologists and others may have said, the kind of change that we call learning is different from both of these models. We can rescue something useful from each model, however, by acknowledging the validity for learning that like interacts with like, as in the billiard table model, and that each individual has an internal principle of motion, similar to the seed.

Before we can speak of the change known as learning, we must determine the limits of the activity. In billiards, we have the table; in gardening, we have the garden. What is the unit of learning? It is tempting to answer, "Why, the child, of course!" But this would be wrong. Much work in remediation has failed because it has assumed that the child is the unit of learning and that he or she can be treated in isolation by individualizing

instruction. It seems to me that the unit of learning has to be a human group and the limits of a child's learning are set by the nature of the groups to which he belongs. This should not be surprising if we think of education as a movement toward human perfection, since man is essentially (not accidentally) social. We might inquire about the characteristics of a learning group, but the range is wide, and we can postpone such a consideration.

It is more important that within the human group it is possible for humans, with internal principles of motion, to interact with other humans. If we were to regard the other humans as a social environment, then it would not be like the environment of the garden for it creates its own immediate pattern of interaction. This pattern of interaction is not predictable since it is not made in accordance with a preexisting model; it is created out of the infinity of unexpected humanity, and it is because of this that leadership arises. The variety of any group needs coordination, for the interests of any one human are bound up with the interests of all.

Any educational leader must recognize that he is neither a billiard player with a cue nor a gardener with a watering can. He is a member of a group that needs to change, at least in the sense that its members need to learn. If the organization of the group, the distribution of energy, is opposed to learning—as I believe to be the case in our educational programs—then the group needs to change its structure. This suggests that the model for the change, which we call learning, might be the process of a group created or group adopted ideal as it interacts with the ongoing life of the group in its particular circumstances. Here it is the beauty of the ideal, the excellence of the good, as it is perceived, that draws and attracts the group members. But the attraction is not that of a magnet, any more than the group members move like iron filings. The ideal is publicly examined and appraised as being worthy of esteem; and as the group chooses to move toward it, the vision of the ideal is extended.

Educational systems cannot be changed by fiat; nobody has sufficient power and even if they had, the new system would be no more educational than the present one. This leaves three forces with which to work: first, the reality of new factors in modern life that should be incorporated into our educational activity; second, the rhetorical appeal to general principles, supposedly enshrined at some remote past time in the existing system, but now forgotten or lost; third, the men and women who play the roles defined by the existing system, roles that provide a decreasing amount of professional satisfaction. The first two of these are not forces in themselves like Newtonian gravitation operating in accordance with the inverse square law. They are, more properly speaking, factors that become forces as they are grasped and accepted by people, by citizens. The third force, the professionals, do not have a sufficient power base to bring about change except in terms of salary, fringe benefits, and working conditions. They, too, need the support of a larger citizen group. The educational system will change only so far as the people in and supporting the system will change themselves, deliberately, consciously, and cooperatively. The change of educational systems must itself be an educational process.

The Structure from the Past

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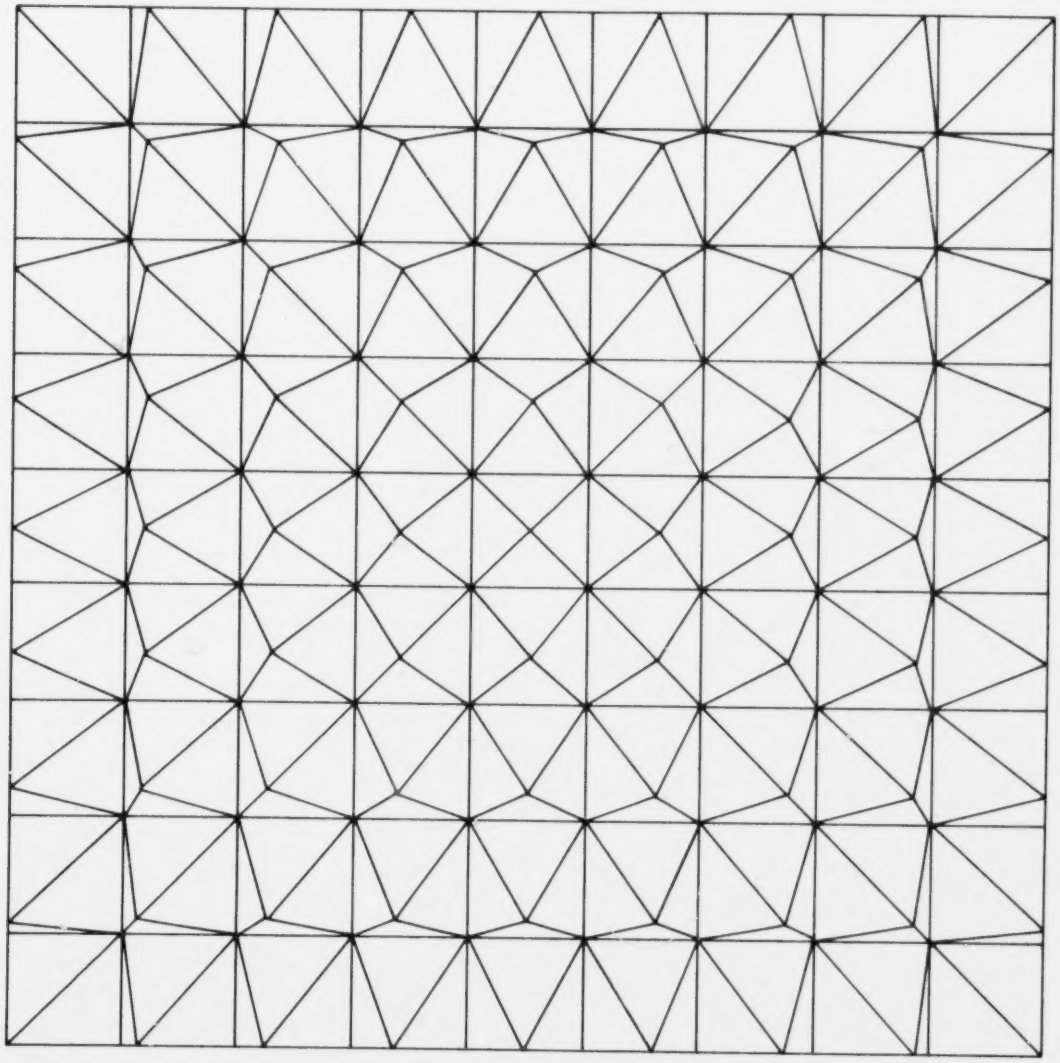

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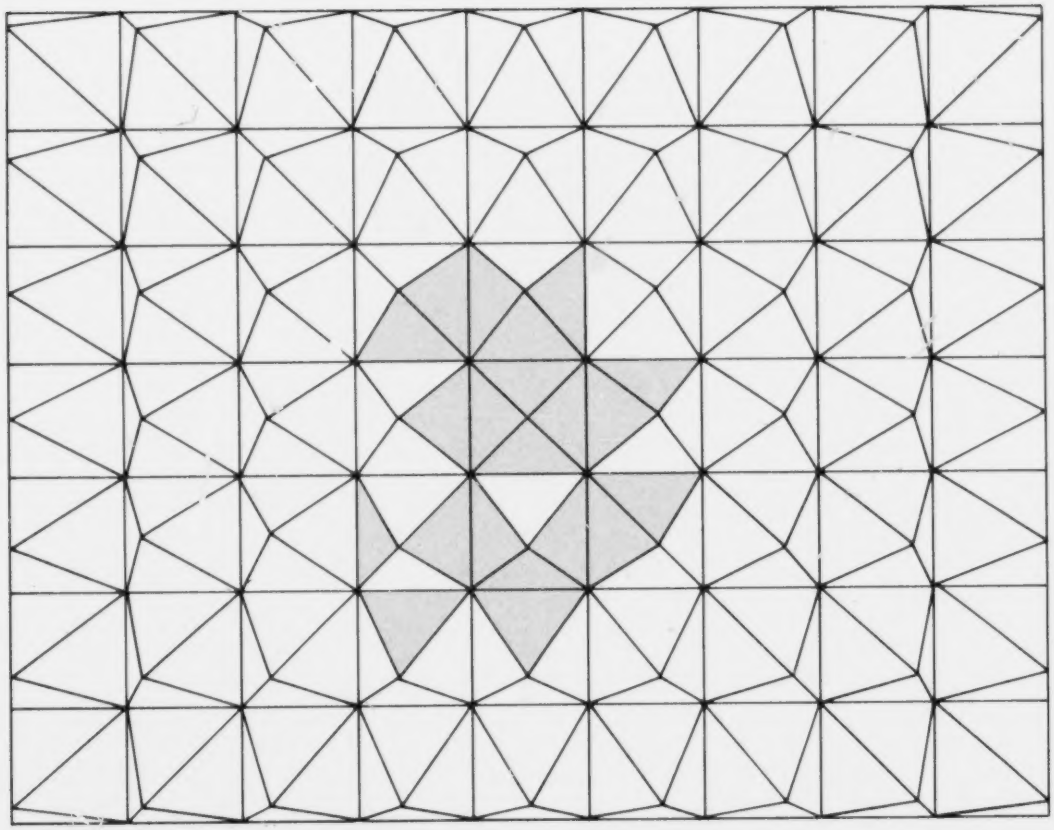

It is well to realize that the universally available public school system is a relatively recent innovation, dating back only a little more than a century. Prior to that time, education was carried on by everyone and involved society as a whole. The amount of formal education was very limited, confined mostly to those able to afford a private tutor. We have a long standing tradition of education carried on, not by professionals but directly by the community itself as a part of its own self-renewal, as a part of its own life.

The creation of public education was necessitated by the changes brought about by increasing industrial development. Mills and factories, the locus of the all-powerful machinery, required hands—not people, just hands in close proximity to the means of production. Punctuality became a virtue because the elaborate mechanism of the factory

had to be set in motion at once, and because people were to be paid by the hour—by time—rather than by productivity or in accordance with need. Rural economies, of course, had to respect time, but the discipline came from the natural rhythm of the seasons and the life cycle of plants and animals, not from the arbitrary factory whistle.

People were drawn to the cities, which did not pretend to be anything more than dormitories from which workers could easily reach their employment. Leaving behind rural ways of life, cut off from the social customs of the village, the city inhabitants had to face the problem of social disorder. There was little or nothing to hold them together. They lived in close proximity to hundreds and thousands of other people; yet they had no neighbors. Their own ways and their own loyalties were different from those around them, and they had little time and no energy to spend on the creation of new social patterns. But it was most important that they learn the social ways appropriate to a machine age—respect for the machines and their products; submission to the discipline of the machines; acceptance of unrelenting, meaningless, and monotonous work; respect for property (particularly other people's, since they had so little themselves); and the virtues of an age of scarcity such as obedience and thrift.

The cities were hard taskmasters, as were most of the mill owners, and they were quite successful, so successful that we tend to forget that the new social role appropriate to the machine age had to be learned. The antidote to this is to recall that with the industrial cities came the police force.

The old ways of educating through the life of the community could not work under these conditions, since there was no pre-existent society into which new city dwellers could be introduced. They came as adults, not as newborn infants, and they came in large numbers. The problem was aggravated by the incredible number of immigrants who were unable to speak the language.

As industrialization spread, it became more complex and needed more people with certain kinds of information and skills. For example, record keeping, distribution, importing and exporting, required people with some expertise and knowledge. It was not new knowledge that was needed, but simply a wider distribution of the knowledge that was available. This constitutes a characteristic problem of the last century—how to disseminate knowledge to more and more people.

Societies, like the "Society for the Diffusion of Useful Knowledge," were formed sponsoring publications and lectures in a wide range of subject matter. Encyclopedias grew and became a sign of intellectuality, if of the self-improving kind; it was clearly desirable to have a source of knowledge in one's own home. It was just as desirable to have a greater source of knowledge located in the community, and so public and private libraries were founded to make available at little or no cost the highly desired information. There was an immense outpouring of printed matter—books, magazines, journals, newspapers, and subscriptions were prized. But above all, the solution to the problem of how to spread wide the knowledge that was already known was to be found in the public school. This was seen as the way to bring the whole child population into contact with useful knowledge, and at the time provide the correct

moral training that would enable them to fit into the pattern of goals that industrialists had mapped out.

The practical difficulty was that no one had ever contemplated an educational program for such vast numbers of people. The nineteenth century innovator, however, was equal to the task and made the suggestion that there was already a human institution capable of dealing with large numbers; namely, the factory, the very institution that was responsible for the conglomeration of people in urban areas. Thus the model was clear. If schools had to deal with large numbers, all that was needed was a school based on the highly productive principles of the factory. And so, quite deliberately and consciously, schools were structured as if they were factories. The teachers were the operatives and the students the raw material. The schools no more than the factories belonged to the people who worked in them. They were owned by managers, boards, and trustees who were thought to represent the public—at least all of the public that mattered. We have, to this day, evidence of this origin in the labor-management pattern of relationship between teachers and school boards, which has nothing to do with the task of education, but only with the models used in the creation of public education.

Teachers had to be of proper moral character, of course, and since their specific task was to pass on knowledge, they had to be properly prepared in subject matter. Teacher certification, especially at the secondary levels, was based on subject matter mastery. The role of the teacher, who knew, was to pass his knowledge on to the student, who did not know. This gave the teacher a definable superiority in the relationship; he knew and the student did not. This inequality joined harmoniously with the notion that the children of the poor, of the immigrant, of the laboring class, had to learn their proper place. They had to accept the role that industrialized society had planned for them, and to prepare themselves for it while they were kept off the labor market. That role was to be an instrument of other people's purposes, to be what Aristotle called "natural slaves." The means of discipline in the schools were harsh, but clearly effective; and it should be remembered that the promised rewards were real and realizable.

Present day schools are still modeled after the factory, the nineteenth century factory, and the general structure still follows the outline set out by the creators of public education. Teachers still assume that their authority is legitimately based on their subject matter mastery, and that students are the raw material, just passing through the school to be processed, never to be seen structurally as a part of the school. Many educators, on examining their own consciences, cannot accept this picture, and certainly this is not intended as a statement of their motives. Individually, many educators mean well, but they do not see that the structure they inherited is more powerful than they, and that whatever their intentions, they are operatives who, despite their humane feelings, consider the students as raw material to be processed. It is the structure that is significant, not the purposes of individual educators. The school is still structurally a factory in spite of wall-to-wall carpeting, lounges, and the abolition of corporal punishment.

System and Matrix

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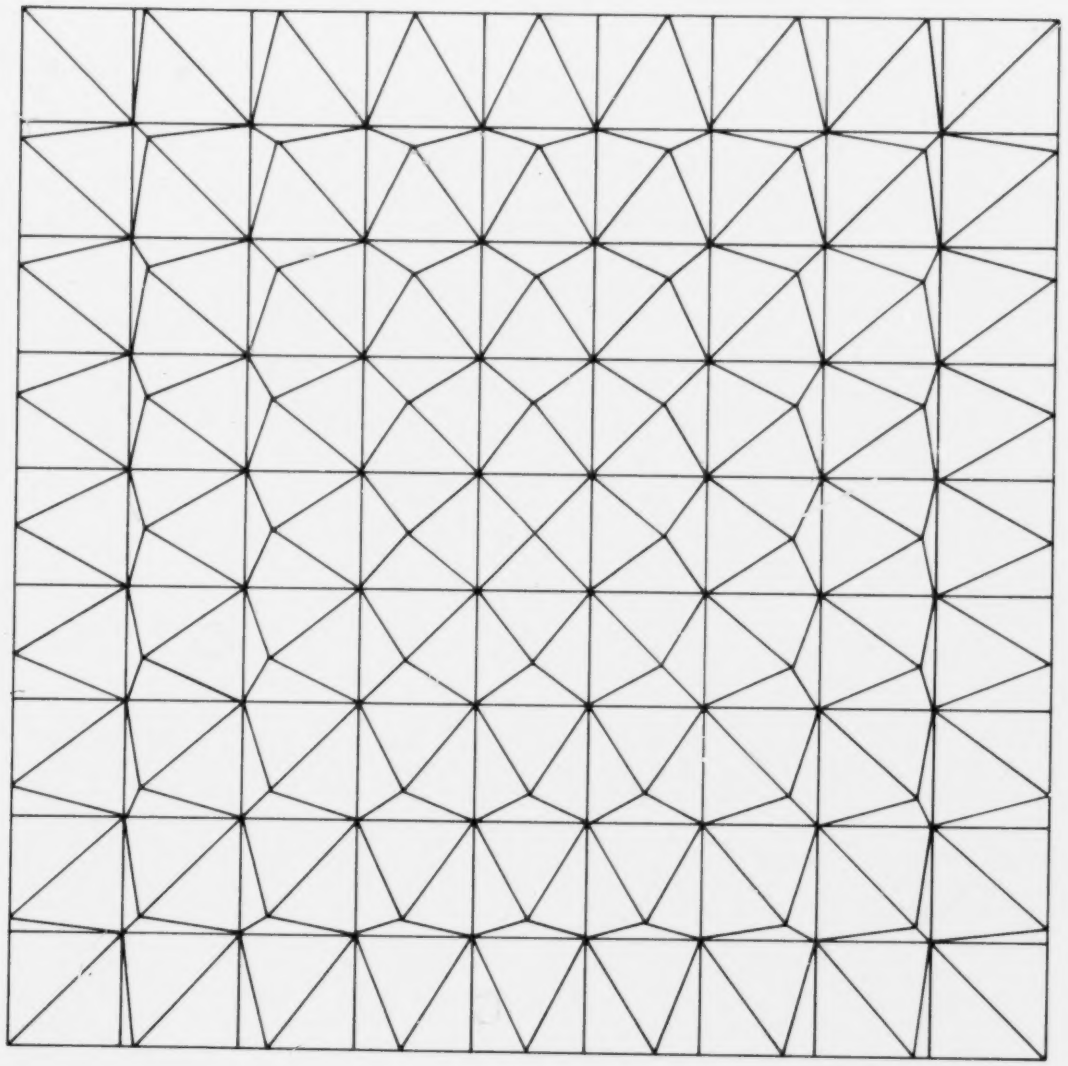

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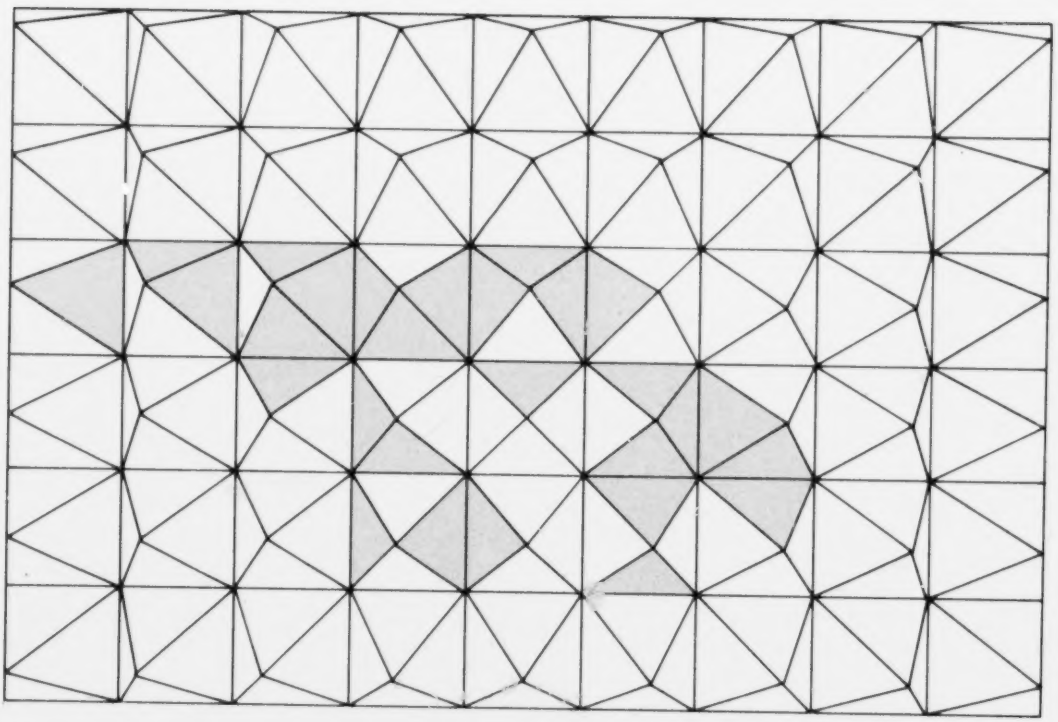

The realization that schools have been structured as if they were factories has caused the growth of a small movement sponsoring "unstructured education." This is puzzling, since it seems a contradiction in terms. Any formal educational program is artificial, it is constructed, and certain forms of organization are provided in the belief that they will define the goals of the program and provide the means for achieving those goals. All educational endeavors, and all educators, are committed to a kind of occupational arrogance in that they suppose that some things are better than others, that some structures are more useful than others, and that citizens of one kind are more public spirited or happier or better in some specific way than citizens of another kind. There is no way in which we, as educators, can escape the responsibility of choosing structure, not even when we say that the less structure, the better.

Proponents of unstructured education seem motivated by concern about the absence of human and humane relations within the

factory model school, and their moral sentiments can readily be shared. They are, however, similar to another group of educators who seem at a loss to know in what other way schools could be organized. In the absence of alternative structures, as it may appear to those who have been well taught by the factory, one either accepts the structure of the school as it is or rejects it. There is, however, another option available.

Although hospitals are operationally ambivalent and at times tend to resemble the local garage to which one goes for the replacement of a defective part, it is possible to use the hospital as a model for an educational institution. If understood broadly enough to include public health, the hospital model would suggest a concern for the physical well-being of the young as reflected in dietary and sanitary rules, physical living conditions, preventive medicine, therapeutic medicine, forensic medicine, and surgery. To translate this model from concern with the body to concern for the soul (meaning the intellectual and emotional dimensions of man) would not be too hard. First, it is assumed that the general structure of physical living in society is adequate to support health if some fairly simple rules are followed and that individuals will on their own initiative consult doctors; and that admittance to the hospital, to the institution, is comparatively rare. Second, that there is no compulsory attendance and no punitive consequences. I am not recommending the hospital as a model for the school, nor am I opposing it. It is enough to realize that the student could be seen as an analogue to the patient, instead of to raw material. Is the educated human being more like a healthy person or a finished product? In any case, education would still be structured, but structured in a different way, making different demands on society, and different demands on the student.

A great deal of anxiety is caused by the supposition that the only alternative to schools as they are is the abolition of structure altogether. This shows itself in the concern about control; children, the young, have to be disciplined, we are told; they must not be allowed to do as they like. I am reminded of the old adage that it doesn't matter what you teach a boy, as long as he doesn't like it. Lack of control is only a bogey man to frighten the child in us; it is the inevitable counterpart of a situation in which more and more people have more and more opportunity to do as they like, and are mortally afraid because they do not know what they like. They have been so accustomed to being means to other people's ends that they do not know their own purposes. There are, of course, the exploiters who use other people as means to their ends, and their investment in the status quo does not require elucidation.

There is no learning without structure. The task of the educator is to provide those elements of order and structure that will support the learner, protect and defend him, and give him adequate security. Without structure, without support, the learner will be either panic-stricken or apathetic. In the former case, in trying to learn anything and everything, he will learn nothing; in the latter case, by trying to learn nothing, he is committed to immaturity.

If the first axiom of education is that there is no learning without order, then the second axiom is that there is no learning without

disorder. Structure is required, but so is unstructure. The structure is supportive but it must not be confining; there must be, as it were, a gap between the learner and the structure. The gap cannot be too great for that jeopardizes the supportive function of the structure, but neither can it be too small because that leaves the student no room to learn. The gap (and I speak in metaphor) between the student and the structure constitutes the unstructured feature of the learning situation; it also defines the learning possibilities of that situation, for learning is the creation of order by the learner in data and materials that were previously disordered to him.

In a certain sense, all structures are educational, for they all teach themselves. If placed under constraints, we learn how to survive under them. Given the structure of schools (and factories), students, teachers, and administrators have learned how to operate within the constraints. But instead of enlarging us, by encouraging us to grow toward structural boundaries that are within our sight but not our grasp, as it were, they have forced us to diminish ourselves, to dwindle into factory hands or students.

For a structure to be supportive of education in the growth sense, it must meet two conditions. The first condition is complex, but it demands that the structure be an intermediary between the learner and the realities of the larger world. In the long run, the student should be able to find enough support for his continuing education in the structures provided by the real world, in its totality. But that is the goal not the starting point. In the educational process, the structure has to be a reflection of the larger world. It must be a microcosm that reflects the larger world, but it must also simplify it, or reflect it in such a way that it can be seen by the learner with his mind's eye not yet fully developed. This requires that the structure be adapted to the student, so that it can be recognized by him as supportive.

The second condition is simply that the structure be capable of expansion and contraction, that it be plastic or even elastic. As the learner learns, he grows toward the supportive structure; and unless it grows with him, what was supportive becomes restrictive, what was enlarging becomes stifling. Similarly, when the student needs to back off, to regress as a prelude to further learning, the structure must close in somewhat to provide an increased measure of support.

School structures meet neither of these two conditions. They are static, not dynamic, and they reflect a world long since past. Instead of a school system that is rigid, what is needed is an educational matrix that is flexible. But flexibility does not imply floppiness any more than rigidity implies rigor. The intellectual difficulty is that the fixity of the system and the product orientation of the school make them easy to grasp and easy to evaluate (or so it is thought). The matrix is emergent, in large part; it has to be created in the light of the existing factors, and it is also process oriented. These are unfamiliar and, therefore, suspect, and it is doubtful if they can be adequately evaluated by anyone who is not a participant in the process, who is not a member of the matrix. Control from the outside is not possible, and it looks as if the price of power is eternal learning. There is good reason to doubt that those who need power can afford the price.

The Elements of the Matrix

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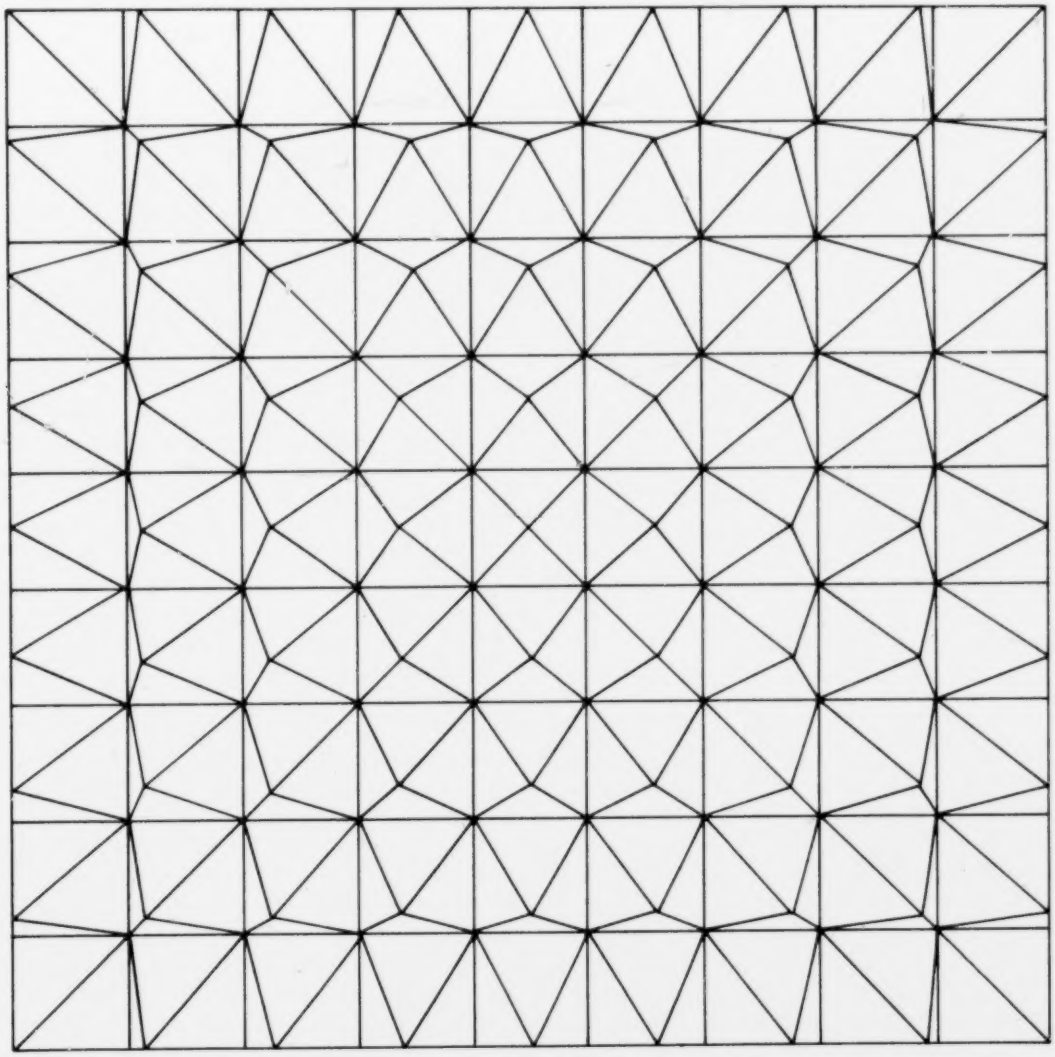

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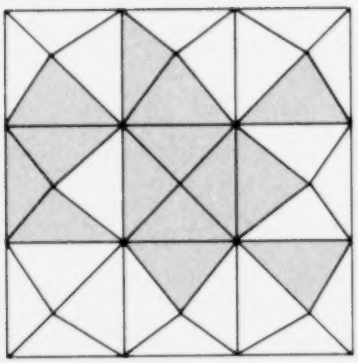


The educational matrix, the structure supportive of learning, like the school system, is made out of four basic elements.

The first of these elements is time. To have organized your time into a timetable can clearly be supportive. It provides a budgetary allocation of energy to various activities, it gives an assurance that all the needed matters will get a share of attention, it ensures an interesting variety of activity within any specified time span, and it provides a way of coordinating one's affairs with the activities of other people. The opening word of Macbeth is "when," and the characters surely need to know what time it is. So do we.

Schools structure time, although they do not seem to do this in the light of the learning needs of the students. It is done, as we say, on administrative grounds. The school year is normally about 185 days; that is, structurally, schools say that learning every other day, on the average, is acceptable. Of course, in the summer months, students are needed to help with the harvest, particularly in the large urban areas. Since the survival of the community depends on its food supply, this must clearly take priority. But even a school week lasts only five days, and the school day only five to six hours. No wonder productivity is so low! The most delicate of the administrative computations, however, is the determination of the class period. Given the number of subjects required by state and local regulations, the number of times which law or custom dictates that they shall be taught in a week, and given the length of the school day (and, therefore, the school week) as determined by the collective bargaining agreement, it is possible, by simple division, to calculate the length of the class period with great precision. It should be emphasized, however, that the student does not appear in the equation.

Once the class period has been determined in this way, it is always possible to find some ex post facto rationalization for it. I have been told that the class period of forty-two and one-half minutes was determined by the attention span of the children. It was more probably the control span of the teachers. In any case, we need to examine again the use of time as an element in the matrix. How can time be used to support the learning of students?

The second element of the matrix is space. It may be true that we need a timetable, but we also need a spacetable. *Where* we have to be may well be as important as *when* we have to be there. No doubt, because they were modeled after the factory that housed the precious machinery, the means of production, schools have been inseparably wedded to a building, to a place. Education has been tied to geography.

For learning to be legitimate, for it to count,

it must take place in the school. What is learned elsewhere may be useful in some way, or amusing, or even enthralling, but it is not valid. It breaks the rules of the game. One suspects that it is not so much a question of whether the knowledge is valid or not, but rather a question of the ability or the desire of the school to test its validity. Learning done off the school premises is not under the direct supervision and control of the school, so it may have been learned in the wrong way (whatever that may mean). At this point, it becomes clear that the factory model school is marvelously economical, for it teaches the student how to sit still at a desk (or a machine) all day and at the same time teaches him mathematics or geography. Presumably, one could not learn geography traipsing all over the face of the earth; certainly, one could not learn to sit still that way.

By the spatial element of the matrix, I mean not only space, but also place and the materials in space. We need to learn about our own bodies in space (through movement, dance, and athletics, in that order); we need to know about the organization of space for different purposes; we need to know about materials, their properties, their possibilities, their economical use, and their conservation; we need to know about configurations in space, about city planning, and about architecture. But all we offer students in schools is an agglomeration of cinder block boxes held together with cream and brown paint. The question we have to face is how to utilize space, not just in the school, but in the whole community, if necessary, to provide a structure supportive of learning.

The third element in the matrix is the subject matter. Within the life of the school, the subject matter has always been the overt justification for what has been done, and certainly society has needed a greater dissemination of knowledge. What has been lost sight of is the fact that the way in which knowledge is disseminated defines roles for teacher and student alike, and that these roles are also inevitably taught. It is also forgotten that the numerical ratio between teacher and students is economically rather than educationally determined, and so the fact of class teaching is also being taught as if it were the best—because the most prevalent—mode of conducting education. Finally, it is important to realize that the subject matter is used as a means of social control (which is why minority groups have the hardest time with the basic skills).

Leaving these caveats on one side, and taking the diffusion of knowledge, the production of knowledgeable people, as the goal of the school at its face value, it is hard to see how the present curriculum can be justified. If we were to take the knowledge contained in the assigned textbooks for the whole twelve years of school, and from it to reconstruct the universe that it represents, I wonder whether we would be able to recognize the present. I very much doubt it. The subjects and topics that are left out altogether, the divisions of subject matter in artificial ways, the lack of continuity between what is stated and any evidence available to us, and the incredible amount of useless, unrelated, and simply incorrect information, makes it very unlikely that such an education could ever furnish us with an intelligible guide to the world in which we live. Students can form no intelligible view of the world through the subject matter of the schools, partly

because the curriculum has no coherence and partly because the level of intellectual achievement is set at such a low standard.

To turn from the acquisition of information to the development of skills does not present a more encouraging picture. To a very large extent, skills are not taught as habits to be acquired, but are turned into quasi subjects. The examinations are usually in terms of information acquired (if only on loan), and not in terms of power to do something. Problem solving is a pretty anemic version of what is required; the problems are banal and the steps to be gone through to arrive at the solution are very pedestrian. In any case, problem formulation would be a much more useful (and also a much more exciting) skill.

It used to be the case that educators could state, with some assurance and plausibility, what the minimum content of a good high school education should be. That is no longer so. The world of knowledge, or our knowledge of the world, has exploded; it is out of control. Who can decide what to include and what to exclude? And yet the subject matter that we are learning, and what it is that we are doing is an important element in our feeling of security. It is very doubtful that students can find much support in what they are expected to learn; and they can find little satisfaction even when they do as they are told.

The fourth and final element of the matrix is the social and administrative organization. In the most general sense, to know how to behave, to know what our roles are, and to know what other people's roles are is vital and potent information. It is not necessarily information in the ordinary sense, since we often behave correctly even though we could not describe our behavior pattern. We play roles largely by habit, unconsciously, and partly because they are unconscious, it is hard to reflect on them, to examine them.

If we know our roles, in the sense that we can play them when appropriate, our outlook on the world is more confident. We also indicate to others their role in the situation, so that they, too, act with more confidence. Our security is not completely bound up with a clearly assigned role, however, for the nature of the role has to be one that we are willing (as well as able) to play.

Students know their role in schools, and it is a role with very little variation. From the day they first enter school, their role is the first item on their learning agenda. If they do not learn that, then they learn nothing else. It is the true curriculum of every school and every human group, and newcomers are subjected to great pressure until they learn how to behave.

An examination of the student's role does not suggest that it is one that would be fulfilling and satisfying, or even useful, in later, adult life. It is a role that is static, not essentially different in college from what it was in second grade; it is a role that contains a minimal amount of freedom and, therefore, a minimal amount of responsibility. It bears out the old conception of a minor or a ward or a lunatic—someone who is not to be held accountable for his actions, and who, therefore, has to be made to do the right thing. But having defined the child in this way, the structure of the social group supports the definition, so that, as far as the school is concerned, the child can never cease to be a child. He may be a difficult child, a way-

ward child, an obnoxious child, or an independent child, but he will be a child until the day he leaves. And for a considerable time afterward.

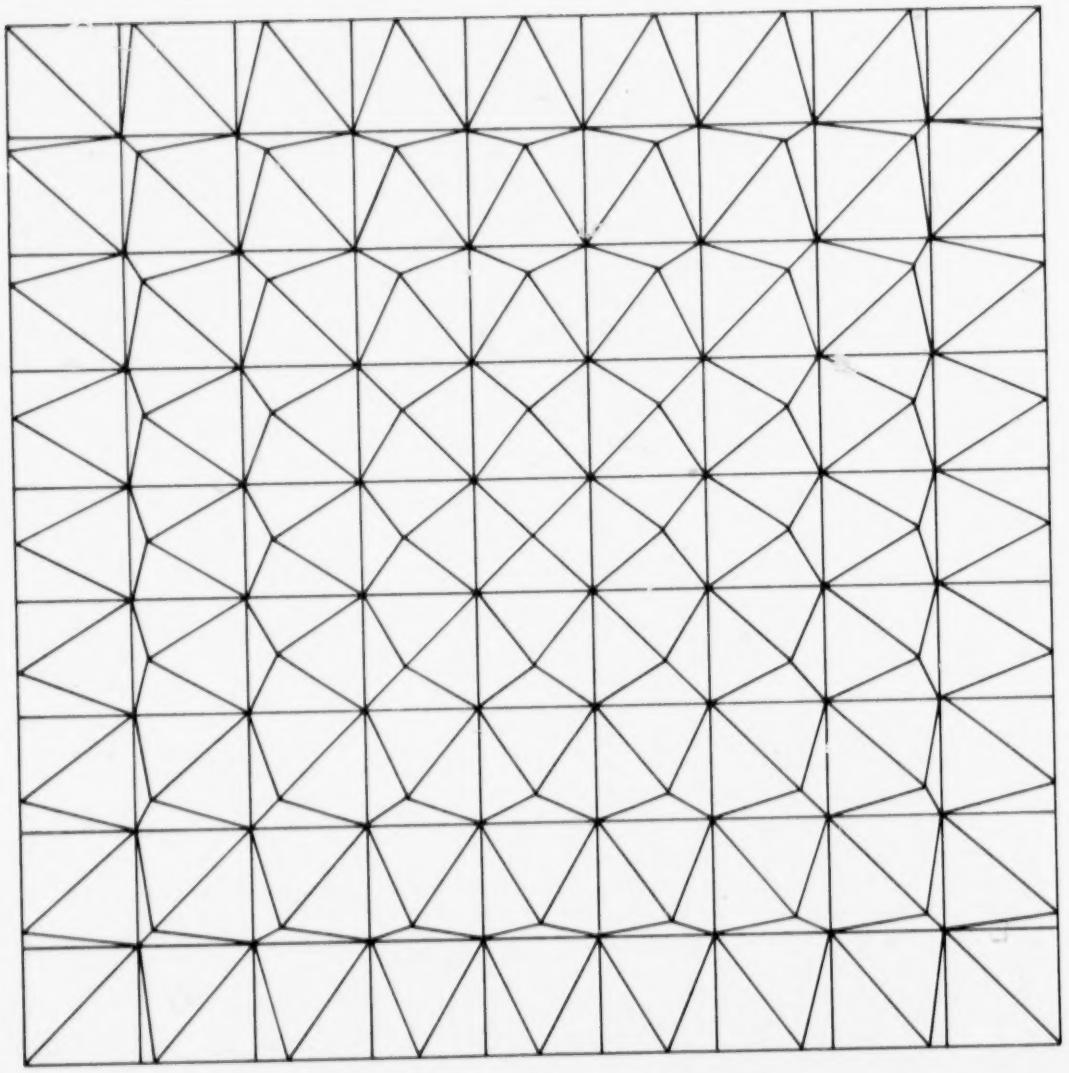
The principles of social organization within the school are as limited as the role of the individual student. Because of the factory model and the need for the proper sequence of mechanical operations, the basic principle of social organization within the school is chronological age. Contrary to almost every idea on learning theory, contrary to all experience, schools assume that the ideal learning group is homogeneous. The task of allocating children into grade levels is a simple but satisfying task for the harassed administrator. Perhaps it is satisfying because it is so simple, for in a world of great uncertainty, he can be sure of a child's date of birth. The grouping is not done in terms of the child's educational age but in terms of the chronological age; and it is assumed that heterogeneity is a disadvantage, instead of a built-in dynamic, a motivation for learning.

The school, when seen as a social system, is a hierarchy. The principal is on the apex (which is why he is so uncomfortable) and the students constitute the base. In between these are the various species of lesser administrators and the teachers. It seems peculiar that the only role that is defined as a learning role is that of the student; all other roles are defined as nonlearning roles, especially that of the principal who is too busy running the school ever to take part in its activities. But since the school is seen to be a hierarchy, and since the principal is the leader, he is structurally defined as better and becomes, again structurally, the model for those lower down in the hierarchy, particularly the students. They are in a frustrating situation, since they are told to be learners, while the hierarchical system tells them that it is better to be the principal, that is, a nonlearner. The structure teaches that to be a learner is to be inferior. This does not enhance the attractiveness of the role.

The modes of behavior in schools are out of keeping with current modes of behavior in the larger society, and the old forms of control are either gone or unreliable. The student is expected to inhabit at least two quite distinct worlds, the world of the school and the world outside the school. They operate on different wavelengths, they have different frames of reference, and the schools have no alternative but to create anew their social and administrative organization.

In brief survey, then, the four elements of the matrix are time, space, subject matter, and the social organization; or, if you prefer it, the matrix provides for the determination of the when, where, what, and who. These constitute the elements out of which a supportive structure for learning can be created, but the task is not easy. One of the greatest difficulties is our own inability to free ourselves, in thought, from the definition of learning that was implicit in our own formal education. We constantly slip back into supposing that learning can only take place if there is teaching, and immediately our focus is off the student; or we think the learning process is less important than what is learned, and we again subordinate the student's learning. I used to think that learning was a kind of absolute; now, it seems to me that its definition is inextricably bound up with the social circumstances in which it is supposed to take place.

24 Alternatives



Educational alternatives can be classified in terms of the variations they make in one or more of the four elements of the matrix.

The least change is brought about by variations in subject matter, which do not affect any other of the elements. Thus, a school system may introduce a new syllabus in psychological development or in television in the belief that these areas of knowledge are more appropriate to the present time than, let us say, athletics and Spanish. The difficulty of this kind of change is that the priority of one subject over another is seldom so clearly acceptable that the change can be made with ease. If it were possible to add another subject, lengthening the school day to accommodate it, then it might be easier. But that does involve a change in another element of the matrix, time, which suggests changes in the boundary conditions of employment for teachers and custodians. The problems are almost endless.

Because of the rigidity of the school timetable, and the lack of any adjustment to meet the needs of subject matter and students, various modest alternatives have been introduced in the element of time. These range from lengthening the class period to modular scheduling. There have also been attempts to change the duration of the school term by strategies such as mini-courses, and these can bring with them a greater variety of subject matter, although what is studied is often not for credit.

However, changes in subject matter and time (provided that the school day and year are maintained) are minor adjustments that may make life easier for the time being for students, teachers, and administrators alike. They do not go to the heart of the matter; although that is intended as a description not as a judgment. Any adjustment made in the school system to render it more like a matrix would have my approval, and it is reprehensible to postpone small changes until sweeping changes are possible.

The element of space raises a lot of problems and generates a great deal more anxiety (particularly among administrators) than either time or subject matter. Even when the exterior boundaries of the school are maintained, and open space schools created within those boundaries, there is much apprehension This is primarily because few teachers are adequately prepared to function in such a setting. As a consequence, they spend the first few weeks of the school year assembling bookshelves and chalkboards in order to create classrooms again. Their anxiety, their annoyance, is communicated to children and parents, and the system's administrators (including the building principal) can find themselves accused of wasting money and investing energy in frivolities.

The real crisis arises, however, when the boundaries of the school building itself are crossed. At this point, the administrator very often feels that he has lost control of the situation. Students and teachers are on their own somewhere, and he has no effective, immediate means of reaching them. He cannot say exactly where they are or reassure himself that everything is in order by going down the corridor to look, or by sending a message, or by using the public address system. Administrators are possessive; they find it hard to let go. They also tend toward paranoia and imagine that they would be destroyed if anything happened to a child away from the school premises. Of course

they would be held accountable, but reasonable precautions can and should be taken—no man can do more than be prudent. It is as if the first task of the administrator was to protect himself, and after that the education of children could take place within the limits that made him feel secure. Thus, his unconscious makes cowards of us all.

This raises again, in another form, the question of whether the school is to teach children to sit still or to teach them subjects. Clearly, it is not necessary to leave the school building in order to learn how to sit still; it is not even desirable. If the subjects of the curriculum are intended in some way to introduce students to the social world and its way of looking at things, then it is highly improbable that very much can be accomplished unless one leaves the school. The world is so complex, rich, and varied that no school can duplicate it. The expertise available in the city is so exact and specialized that teachers could not compete with the professionals in the field. Moreover, the life of the city, its excitement and its rhythm, provide an irresistible attraction to children. All educators do is to complain about lack of motivation.

Motivation is spoken of as if it were something that was plastered on from the outside, a kind of embellishment or final touch. I think we have to accept the fact that schools are finding students less and less motivated within the schools because the stimulation of the school is so much less than that of the city, of their lives outside. Of course, the real problem is not that students lack motivation; the problem is that they are motivated to do things that the school cannot handle. This is not because of some moral defect or perversity on the part of students; it is because of the imbalance between the colorful and intricate mosaic of the city and the drab and predictable contour of the school.

To leave the school, incidentally, also threatens the subject matter and temporal elements of the matrix. Students will want to study, to learn about the city. Such things do not get classified in terms of subject matter very easily, and they all want something different. In addition, once they leave the building, they may not get back in time for the next lesson, and the whole school timetable will be in ruins, along with a lot of administrative energy and pride that went into its making. Other obstacles to leaving the schoolhouse are couched in terms of insurance, parental consent, and state law. However, none of these are insurmountable.

The most fundamental element in the matrix is the social and administrative organization and, very specifically, the role of the student. Although changes in the other three elements will indicate, suggest, and even demand changes in the role of the student, it is best, as a matter of strategy, not to consider this first. If we can see a reason for a new role definition, most of us are rational enough to consider the possibility. It is very abstract and threatening (since it has no limits) to be forced as a matter of principle to commit ourselves to a change in role first.

The role of the student is central because, after all, he is the one to whom something is supposed to happen; he is the one who is expected to change or to be changed. His role is defined in terms of change, and it is not difficult to see in schools as they are what the specific changes must be, for the other three elements of the matrix combine to bring about the required alterations. The

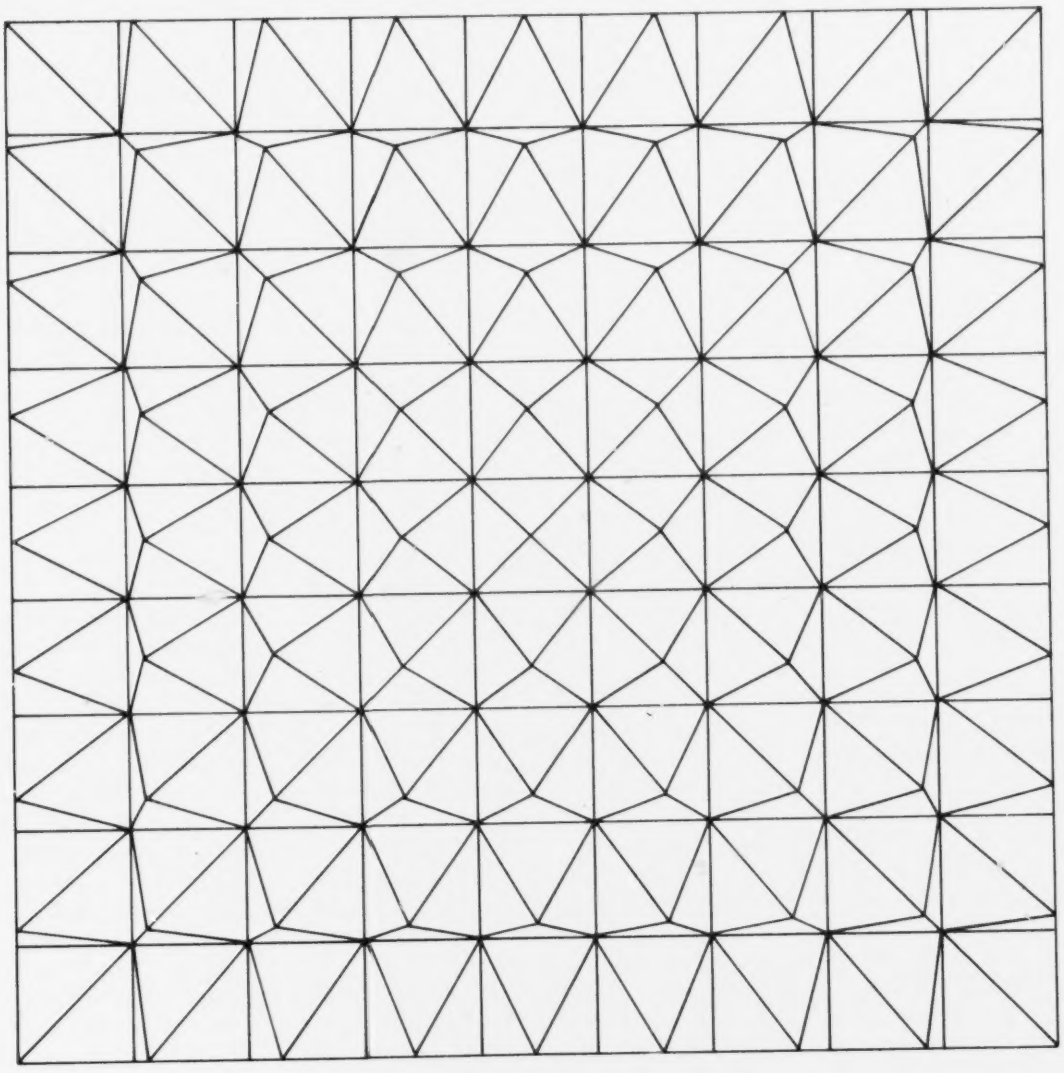
student has to learn that his temporal and spatial boundaries are not within his control, but are determined by an authority he never meets and enforced by the school administrators, his teachers, and even his own parents. Not only must he learn to accept time and space limits set by others for a good part of his life, but he must also come to terms with the fact that what he does within those limits is outside his jurisdiction. The subject matter is mostly preordained, and the student has to acquire the proper method of learning it. This entails a great deal of inactivity on his part. He is never a stimulus, always a response. He has no initiative, no freedom; therefore, he learns that he is not responsible. The structure forces him into a role without any appreciable satisfaction, unless it can be bootlegged in despite the structure. There is no satisfaction, because there is no meaning in the role. It is not significant.

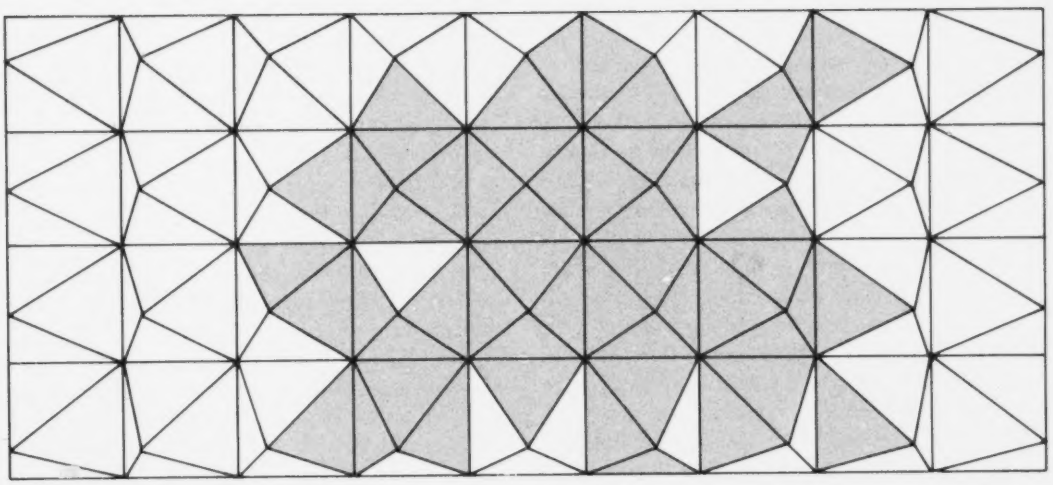
I do not believe that the role was always without significance, but the social environment has taken the significance away by its rapid development and brilliant efficiency in communication. The school is pretty impossible as a productive enterprise, and its structure does not permit it to be seen as anything but a putative factory. The students have known about its uneconomical condition for a long time; so have many educators. Now, in another sense, so do the taxpayers.

If we were to sit down and think through the programs, the processes, and the structures that would assist the young to become constructive and satisfied citizens, we would never recreate the public school system as we have it. This does not mean that it has always been wrong; it may well have been right, as right as was possible then. But that does not make it right now. The role of the citizen has changed, while the role of the student has not; it is no longer in harmony with the way of life of society. To help the student to learn the values, attitudes, and skills required in our kind of society, we must change his role, which can only be done if every other role in the educational system is also redefined. That demands of educators that they be learners, but this is only possible if they are supported by each other and by the larger society. As we learn we are vulnerable, and as we get older our vulnerability increases.

To say that we require support is only another way of saying that we require structure, but to be psychologically supportive is not the only function of structure. Structure also carries values. We learn the values in terms of which we act from structure, and from the way others act within that structure. We do not learn values from sermons; they are merely words. Our children learn their values primarily from the structures of family and the school. If they do not treat us with respect, it is because they are not given a position of dignity worthy of respect. If they are disobedient, it is because they see and hear disregard for authority all the time, and the laws they are expected to obey in school cannot be justified in terms of learning. If they are destructive, it is because they themselves are diminished and destroyed by the limitations of the school. Our most serious concern has to be the values implicit in our present structure, in school and society, for they are what our children learn. If we do not approve of the young, we should remember that the family, the school, and the society taught them.

28 The Structure for the Future





In both school and society, the old structures are becoming uneconomical. Social structures provide a pattern for combining, so that what one man cannot do, or can only do with great difficulty, can be done by a group, by a team. The division of labor carries with it the need for the combination of labor, and we almost take for granted the increased power that comes from the dividing and combining. Ignoring for the moment the inertia of custom, every social structure, every group must show itself to be an economic proposition. That is to say, every social structure, every group has to ensure that there is a proper relationship between the amount of energy liberated by the combination and the amount of energy required to sustain it. When the latter increases suddenly, or when it exceeds the former, the structure ceases to be viable. That is the situation of our schools. The energy required to sustain them exceeds the return that society, at large, thinks it is getting.

The only energy supplied by the society directly is money. Money for buildings, money for textbooks, money for furniture, money for teachers' salaries, and so on. This is a great pity for there is no way in which taxpayers can get a return in kind. They make a financial investment, but it is not seen as an investment for there is no reward; it is much more like the cost of carrying on busi-

ness in a particular place. Both school and society would be better off if it were possible for citizens, for society generally, to make contributions of energy in other forms—not to the exclusion of money, but including other kinds of energy such as time and expertise. To make contributions in these ways would ensure some satisfaction, some reward to the citizen. Of course, this would require modification of the present social organization of the school systems because there is no available role for the private citizen to play. This is an advantage, however, since the present structure of a school system will never find enough money to maintain it. We need much more energy in our educational programs, but I doubt that we need more money. The money is too easily converted into energy to maintain the system without much consideration of whether it is doing its job. The conversion is easy, and it is easily kept hidden. What the schools need cannot be bought with money.

This could be put in another way by saying that society has to assume a more complicated responsibility for the education of the young. The responsibility is not discharged by paying taxes. Education must become a function of the total community, not least because everyone of us needs to concern himself with his own progressive education in the light of the changing society. But it is also for the sake of the student who must learn that to be a learner is a noble thing. It is not the mark of an inferior.

New patterns of society are emerging and with them, new patterns of education. The schools were founded and structured more than a century ago to teach respect for the powers that be, for property, for productivity, and for the diffusion of subject matter. However, the diffusion of subject matter is no longer a major problem. Knowledge is readily and cheaply available in newspapers, books, magazines, television, radio, and film. Instead of not knowing enough, we may sometimes wonder whether children do not know too much, more than is good for them even. I suspect that the latter means more than is good for us, but children do know a great deal more than their predecessors at the same age. The problem is not the diffusion of knowledge but the explosion of knowledge; and it really is an explosion, with bits and pieces everywhere. But there is no coherence in the child's knowledge because there is no coherence in its impingement on him; he is bombarded with it, he does not acquire it.

This suggests, as far as formal education is concerned, that the organization of knowledge, the storage and retrieval of knowledge are more important than the knowledge itself. Now, knowledge is not merely an ornament to be privately treasured; it is used; and with the organization of knowledge, we learn the uses to which it can be put. The organization is particularly important because different tasks, different uses require different modes of organization. In the past, knowledge has been treated as if it were a private possession, a chattel, or a commodity to be bought and sold. It is doubtful whether we can continue this practice indefinitely. Knowledge is not privately acquired; it is made available by society, as are research facilities for the creation of new knowledge. There is a growing sentiment among educators and students that knowledge has a public character. Its usefulness is not as an object of personal, private gain, to be sold in the market place

to the highest bidder. More and more, knowledge is seen as a mode of service to the public, to the community.

As long as knowledge (or intelligence, for that matter) was brought and sold, it could only be instrumental, problem solving. It had little or nothing to do with the recognition and articulation of the problems. They were taken from elsewhere and were presented, by authority, for solution. Whoever paid the piper, called the tune. One of the characteristics of the past few years has been the increasing initiative shown by groups of citizens, small and large, in raising questions, in drawing attention to problems that were being deliberately or accidentally overlooked. With the change in communications systems, has come a change in the distribution of authority and initiative. No doubt there are mixed feelings about this, but it is fortunately beyond wishes. Instead of being controlled from without, students are having to learn self-control; that is, in addition to being controlled by other people's purposes, students must learn to be controlled by their own.

This suggests that the future curriculum must be based on skills of communication, skills of organization and management, and political skills, but not dealt with in a purely academic fashion. From nursery school on, children must learn to take some control, some responsibility for their own learning; there is plenty of evidence to show that they can do it. This also suggests a change in the way in which we have thought about intelligence. Intelligence was seen as a private possession, belonging to the individual, but now it must also be seen as social, belonging to the group. Henry George pointed the way a long time ago. Speaking of the steam driven, ocean going ships, he remarked:

"There is nothing whatever to show that the men who today build and navigate and use such ships are one whit superior in any physical or mental quality to their ancestors, whose best vessel was a coracle of wicker and hide. The enormous improvement which these ships show is not an improvement of human nature; it is an improvement of society —it is due to a wider and fuller union of individual efforts in accomplishment of common ends."

The future depends on social intelligence, on "a wider and fuller union of individual efforts in accomplishment of common ends." It depends on cooperation much more than it depends on competition. To those who can find motivation only in competition and who claim that it is the only source of endeavor, it must be pointed out that they learned competitiveness in our social and educational system, and if their education had been different, their opinion would be different. That they cannot understand this is a tribute to their education; it is also the indictment of it.

We are moving toward a situation in which the organizing principle of a school will be the cooperative social skills, attitudes, and values that we expect a student to need, and the range of social settings in which they will be utilized. The design will start with the social structuring necessary for learning a repertoire of social skills and values, and the other three elements of the matrix will be structured accordingly. What will happen to the subject matter? It will be brought back into contact with life. It will cease to be purely academic and will become exquisitely social. That is, human.

32 About the Author

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Since 1946, when he taught in a one-room elementary school in rural England, he has had a wide experience in education at all age levels, and in all types of institutions. The creator of Philadelphia's Parkway Program, the original School Without Walls, John Bremer was also the founding director of the Institute of Open Education, and designed an experimental graduate program at the University of Leicester.

John Bremer is co-author of *The School Without Walls* and, with Anne Bremer, of *Open Education: A Beginning*. He has also contributed many articles to professional and popular journals. Three further books will be appearing shortly, *A Matrix for Modern Education, Open Essays in Education,* and *Education and Politics.*